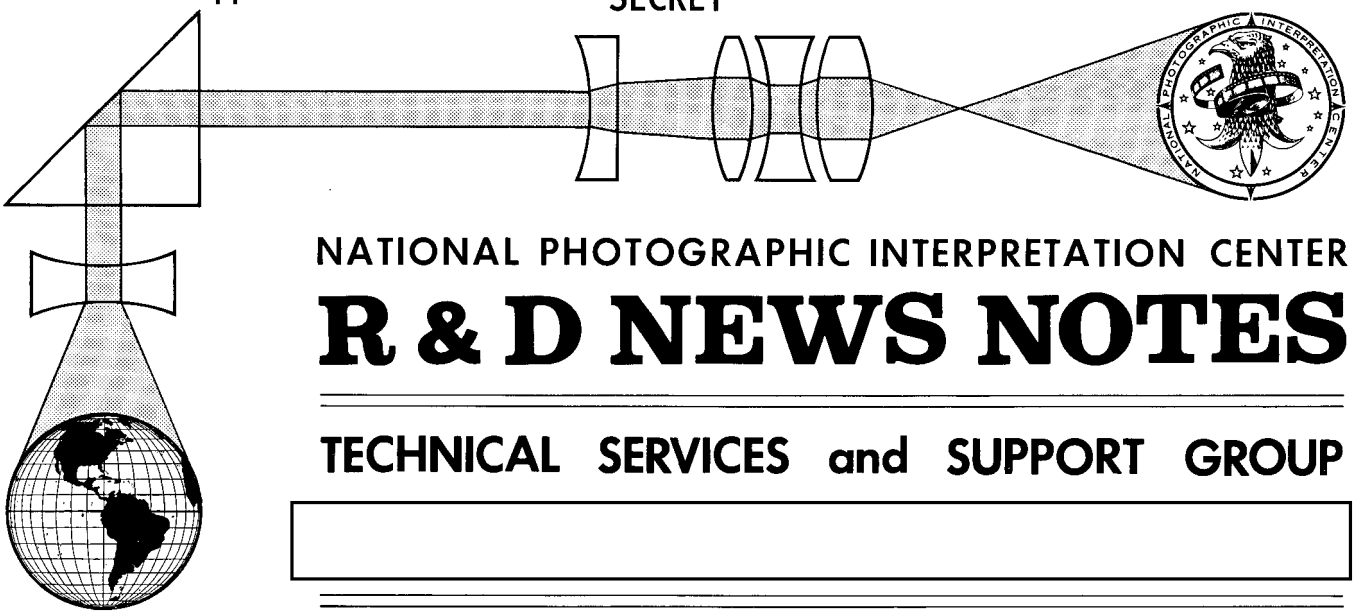


NATIONAL PHOTOGRAPHIC INTERPRETATION CENTER

R & D NEWS NOTES

TECHNICAL SERVICES and SUPPORT GROUP

[redacted] 25X

Vol. 1, No. 9 October, 1968

The following items are of general interest to those concerned with photo interpretation and related intelligence production. They are published by the Technical Services and Support Group with the objective of creating better communication between operational personnel and those engaged in R&D. Questions, comments and suggestions are encouraged and should be sent to Editor, R&D News Notes, Room 5S-453 [redacted] 25X

New Microscope Developed Using Inter-Service Funds

The Image Enhancing Microscope is an electro-optical device developed under a joint funding agreement between the Air Force Systems Command and the Naval Air Systems Command. It scans positive or negative imagery with a flying spot scanner and displays the image on a high resolution TV monitor. The video signal may be electronically processed to produce contrast changes and edge enhancement for detailed analysis and interpretation. The film may be viewed directly by the PI or can be microscopically scanned and electronically displayed on the TV monitor. Changing from one viewing mode to the other is easily and rapidly accomplished.

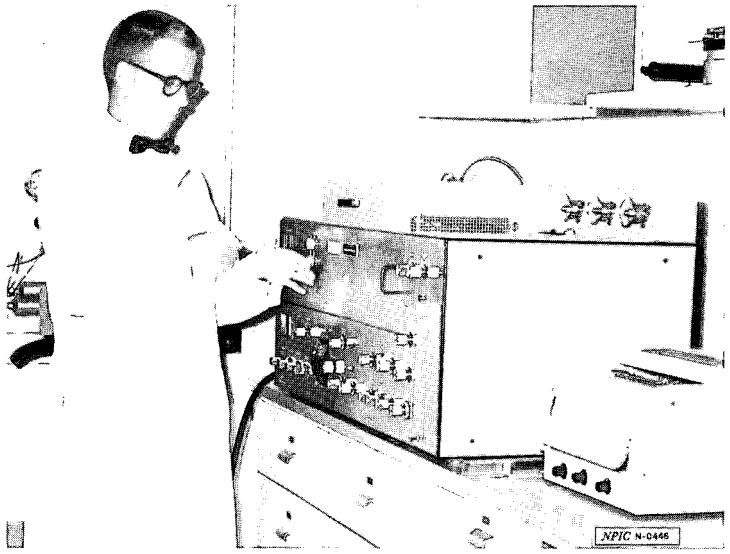
Cut film chips up to 10 inches by 10 inches and roll film can be accommodated. A zoom magnification from 10 to 100X is possible between the film stage and the display. At 100X magnification the unit is capable of resolving a 1/10 inch square up to 300 lines per millimeter. The image can be rotated 360°. The coordinate location on the film plane is displayed on two dial indicators with a least count of .001 inch. The magnification of the system is displayed both on the console and on a meter near the monitor. The system is undergoing test and evaluation at the Naval Reconnaissance and Technical Support Center. Point of contact is [redacted] [redacted] 25X1 25X

Gas Chromatograph

The recent installation of a [redacted] Model 900 Gas Chromatograph (GC) in the Exploratory Laboratory has significantly increased the Center's capability for conducting chemical analysis. 25X

The Laboratory plans to apply the GC to problems which interrelate the characteristics of developed film to minute changes (or impurities) in photographic processing baths and to problems in chemical safety in which hazardous components of noxious atmospheres are identified.

The GC is a modern instrument having such advantages as: a wide range of materials to which it can be applied, simplicity of the apparatus, speed of analysis, and sensitivity of detection. It can be applied to any unknown mixture of materials provided that at least one component vaporizes at the instrument operating temperature, and that such components do not decompose at that temperature.



The instrument consists of five basic units: a sample port for injecting an unknown mixture into the instrument and heating it to create vapors; a carrier gas supply for moving vaporized compounds through the instrument; a metallic column or tube containing a special chemical which separates the individual vaporized compounds present in the unknown mixture; a detector for indicating the emergence of an individual compound from the column; and a chart recorder. The data is presented on a chart which can be interpreted to determine the quantity of the compound in the mixture, and to aid in its identification.

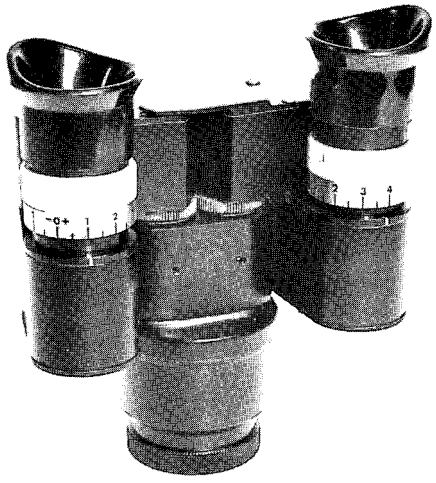
Analytical separations are realized in very short times ranging from a few minutes for complex mixtures to several seconds for simple ones. This feature makes the GC an ideal instrument for process control where it yields nearly "instantaneous" results for ongoing processes.

Through judicious choice of available detectors of the hot wire or ionization types, quantities of certain unknown substances as small as 5 trillionths of a gram can be detected.

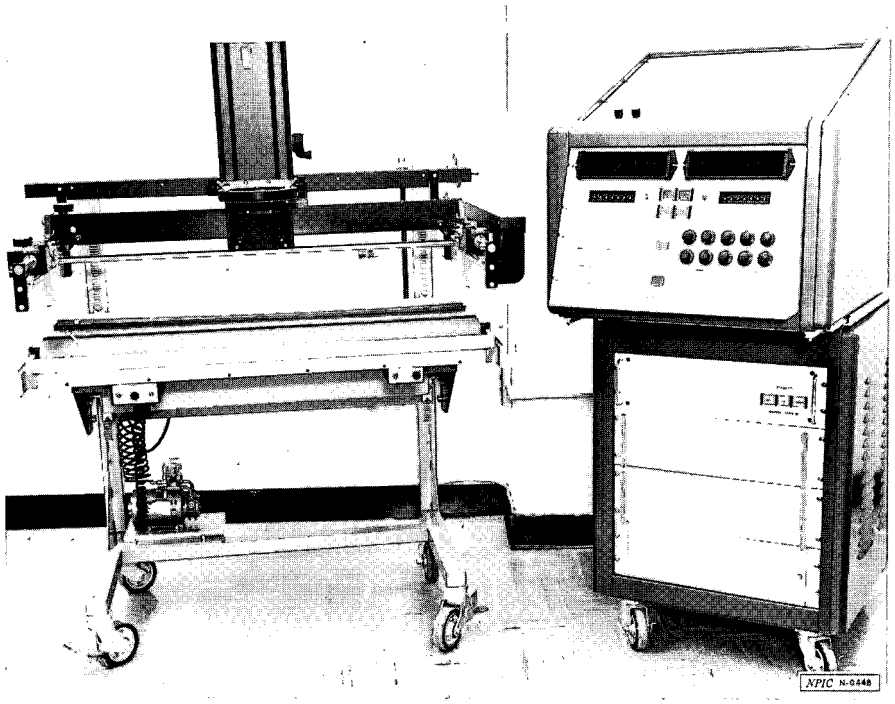
The instrument scientist is [redacted] 25X1

Lower Cost Binocular Tube Magnifier

A binocular tube magnifier is presently being fabricated [redacted] 25X1 similar to one previously developed by another manufacturer. The previous design had the advantage of being very compact but could not be produced at a reasonable price. The lowest estimate for production was [redacted] for each unit. The new magnifier, while slightly larger, can be produced at a much lower price--[redacted] This achievement was made by using mass produced parts from an [redacted] microscope. 25X1 25X1 In addition, the image quality will be superior to that of the former design. The new magnifier will have a larger field of view and a greater eyepoint (distance between lens and the observer's eye) than the original design. As a consequence, operators should be able to wear eyeglasses while using the instrument. The first unit was delivered this month and all interested operational units will have an opportunity to evaluate its performance. The Project Officer is [redacted] 25X1 5S-453B). The association of the contractor with the CIA is classified Confidential, but the tube magnifier is unclassified.



XPIC M-6447



Digitized Measuring Light Table (Prototype)

The Digitized Measuring Light Table (DMLT) prototype is a photo interpreter's light table with an "on-line" measuring capability. The DMLT prototype utilizes a standard [redacted] Master Series 940 MCE Light Table with an optional vacuum film holddown. A pair of [redacted] DIG Linear encoders are mounted on the light table carriage and a separate console with the on-line control panel stands next to the table. The operator utilizes the light table with a technique similar to that employed on the [redacted] Chip Comparator now in use at NPIC. The PI does not, however, have to chip his targets before using the DMLT since it does accept roll film.

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With the DMLT the PI can make measurements on the film with an estimated accuracy of ±5 microns (accuracy tests of the prototype have not been run yet). In addition to this, the DMLT can be used as one of the communication devices to the Integrated Informations System (under development). With proper programming, it should also be possible for the DMLT to directly transmit photo coordinates to the photo lab to speed the ordering of enlargements. It is hoped that the DMLT prototype will aid in the evaluation of these concepts and facilitate bringing computer support closer to the photo interpreter. The DMLT recently arrived at NPIC and is being tested and evaluated by the Equipment Performance Division. The Project Officer on the DMLT is [redacted] This equipment is unclassified, but the association of the contractor with the Agency is Confidential.

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